

Section 638—Structural Supports for Overhead Signs

638.1 General Description

General Provisions 101 through 150.

638.1.01 Definitions

General Provisions 101 through 150.

638.1.02 Related References

A. Standard Specifications

Section 501—Steel Structures

B. Referenced Documents

General Provisions 101 through 150.

638.1.03 Submittals

General Provisions 101 through 150.

638.2 Materials

638.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

638.3 Construction Requirements

638.3.01 Personnel

General Provisions 101 through 150.

638.3.02 Equipment

General Provisions 101 through 150.

638.3.03 Preparation

General Provisions 101 through 150.

638.3.04 Fabrication

General Provisions 101 through 150.

638.3.05 Construction

A. Construction Checklist

To minimize quality acceptance problems in structural supports for overhead signs, use the following checklist during construction:

1. Ensure that the proper footing size and type is in place. Each structure has a different footing size. See the approved shop drawings for each structure for more information.
2. Check every footing to ensure that the proper amount of steel is placed in the top and bottom mat. The sign foundation base will have vertical bars and circular tie bars. Check the number and spacing of the bars to ensure they comply with the shop drawings.
3. Check the pedestal elevation against the final grades to ensure that the pedestal will be above ground when construction is finished.
4. Verify that each anchor bolt has a Georgia Department of Transportation (GDT) stamp. This indicates that they have been sampled, tested, and approved by the Department.
5. Ensure that the anchor bolts have been placed deep enough into the footing. Bolts must go at least 1 ft (300 mm) into the footing.

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6. Ensure that all anchor bolts are spaced exactly to the base plate diagram for the structure at that location. Use a template as a precautionary measure.
7. Reject any footings that have out-of-plumb anchor bolts.
8. Do not heat or bend anchor bolts.
9. Notify the [Office of Materials and Research](#) immediately after Type II Cantilever sign footings have been placed. The [Inspection Services Branch](#) of the [Office of Materials and Research](#) must visually inspect Type II Cantilever sign footings and anchor bolts.
10. Use this procedure to erect the poles:
 - a. Place the leveling nut on the anchor bolt with the machine side facing up.
 - b. Place the flat washer on the nut and allow for camber (planned deformation).
 - c. Set the pole on the anchor bolts.
 - d. Place the flat washer on the anchor bolt on top of the pole base plate.
 - e. Place the lock washer.
 - f. Place the top nut and tighten the top nut down until the lock washer is pulled flat against the flat washer.
 - g. Attach the structure arm to the pole.
11. Ensure that the arm plates and upright plates are pulled tight against each other.
12. Use the “turn of the nut” method in Subsection 501.3.03.A.3, “Turn-of-Nut Method Verification,” Table B: Nut Rotation from Snug Tight, of the Specifications to tighten the bolts.
13. The distance between the bottom of the pole base plate and the top of the concrete foundation shall not exceed 4 inches (100mm), do not grout the bases. See Subsection 638.1.03.C of the Specifications.
14. Notify the [Office of Materials and Research](#) immediately after Type II Cantilever signs have been erected. The [Inspection Services Branch](#) of the [Office of Materials and Research](#) must ultrasonically test the anchor bolts. The Project will not be accepted until the ultrasonic testing produces acceptable results. (See Lab SOP 21.)
15. Refer to Figure 2 in Subsection 638.1.03 of the Specifications.

B. Type II Cantilever Structure Construction Checklist

Because Type II Cantilever structures are an area of concern, do the following during construction to minimize problems:

1. Maintain a maximum 4 inch (100 mm) distance between the bottom of the pole base plate and the top of the concrete foundation. See Detail A1 (metric).

Ensure anchor bolts are properly placed and tightened.

Maintain a minimum 4 inch (100 mm) distance from finished grade to top of concrete footing pedestal.

638.3.06 Quality Acceptance

A. Inspecting Overhead Signs

Existing Cantilevered structures may have anchor bolt deficiencies such as:

- Missing nuts
- Missing lock washers
- Missing flat washers
- Loose nuts
- Bolts with less than full thread exposed
- Pole base plates that are greater than 4 inches (100 mm) above the top of the concrete foundation.

These deficiencies lead to anchor bolt fatigue, cracking, and failure.

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To avoid these problems, the Project Engineer shall use the Sign Structure Inspection Checklist above. He or she shall also use the Example Shop Drawings to find areas that require special attention.

Sign structure inspection does not require full time inspection (except for footing concrete placement). When inspecting sign structures:

1. Check the foundation excavation, form dimensions, and rebar spacing before pouring.
2. Inspect the structural assembly and erection to ensure that it complies with the approved shop drawings.
3. Consult [the Office of Materials and Research](#) when inspecting the Cantilever signs, as noted on the above checklist.

B. Ultrasonic Testing

Ultrasonic testing, as noted in the construction checklist, will be required before Cantilever structures can be accepted. Ultrasonic testing is part of a continual, yearly maintenance inspection program.

Obtain assistance from the [Office of Materials and the Office](#) Construction Liaison Engineers to answer questions and ensure proper structure construction.

638.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

638.4 Measurement

General Provisions 101 through 150.

638.4.01 Limits

General Provisions 101 through 150.

638.5 Payment

General Provisions 101 through 150.

638.5.01 Adjustments

General Provisions 101 through 150.